

a channel region in the semiconductor island between the source and drain regions;

a pair of lightly doped regions formed between the channel region and the source and drain regions wherein an impurity concentration in the lightly doped regions is smaller than that in the source and drain regions;

a gate electrode formed over the semiconductor island with a gate insulating film interposed therebetween wherein said gate electrode comprises at least a first conductive layer and a second conductive layer formed on the first conductive layer, said first conductive layer having a pair of tapered portions, which extend beyond side edges of the second conductive layer,

wherein the pair of lightly doped regions has a pair of first portions which are overlapped by the pair of tapered portions of the first conductive layer, and a pair of second portions which extend beyond side edges of the first conductive layer.

16. (Amended) A device according to claim 13, wherein the first conductive layer includes at least one selected from the group consisting of chromium (Cr), tantalum (Ta), an n-type silicon containing phosphorus, titanium (Ti), tungsten (W), and molybdenum (Mo) while the second conductive layer includes at least one selected from the group consisting of aluminum (Al), copper (Cu), chromium (Cr), tantalum (Ta), titanium (Ti), tungsten (W), molybdenum (Mo), an n-type silicon containing phosphorus, and silicide.

Please add new claims 46-81 as follows:

--46. A semiconductor device having an active matrix display device, said display device comprising:

at least one first thin film transistor formed over a substrate;

a pixel electrode electrically connected to said first thin film transistor;

a driver circuit including at least one second thin film transistor formed over said substrate for driving said at least one first thin film transistor, said second thin film transistor comprising:

a semiconductor island on an insulating surface over the substrate;  
source and drain regions formed in the semiconductor island;  
a channel region in the semiconductor island between the source and drain regions;

a pair of lightly doped regions formed between the channel region and the source and drain regions wherein an impurity concentration in the lightly doped regions is smaller than that in the source and drain regions;

a gate electrode formed over the semiconductor island with a gate insulating film interposed therebetween wherein said gate electrode comprises at least a first conductive layer and a second conductive layer formed on the first conductive layer, said first conductive layer having a pair of tapered portions, which extend beyond side edges of the second conductive layer,

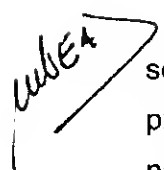
wherein the pair of lightly doped regions has a pair of first portions which are overlapped by the pair of tapered portions of the first conductive layer, and a pair of second portions which extend beyond side edges of the first conductive layer.

47. A device according to claim 46, wherein an angle between the tapered portions of the first conductive layer and the gate insulating film is in a range of 3 to 60 degrees.

48. A device according to claim 46, wherein the semiconductor island is a crystalline silicon island.

49. A device according to claim 46, wherein the first conductive layer includes at least one selected from the group consisting of chromium (Cr), tantalum (Ta), an n-type silicon containing phosphorus, titanium (Ti), tungsten (W), and molybdenum (Mo) while the second conductive layer includes at least one selected from the group consisting of aluminum (Al), copper (Cu), chromium (Cr), tantalum (Ta), titanium (Ti), tungsten (W), molybdenum (Mo), an n-type silicon containing phosphorus, and silicide.

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50. A device according to claim 46, wherein the semiconductor device is one selected from the group consisting of a video camera, a digital camera, a rear-type projector, a front-type projector, a head mount display (a goggle-type display), a navigation system for vehicles, a personal computer, a mobile computer, a cellular phone, and an electronic book.

51. A semiconductor device having an active matrix display device, said display device comprising:

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- at least one first thin film transistor formed over a substrate;
- a pixel electrode electrically connected to said first thin film transistor;
- a driver circuit including at least one second thin film transistor formed over said substrate for driving said at least one first thin film transistor, each of said first and second thin film transistors comprising:
  - a semiconductor island on an insulating surface over the substrate;
  - source and drain regions formed in the semiconductor island;
  - a channel region in the semiconductor island between the source and drain regions;
  - a pair of lightly doped regions formed between the channel region and the source and drain regions wherein an impurity concentration in the lightly doped regions is smaller than that in the source and drain regions;
  - a gate electrode formed over the semiconductor island with a gate insulating film interposed therebetween wherein said gate electrode comprises at least a first conductive layer and a second conductive layer formed on the first conductive layer, said first conductive layer having a pair of tapered portions, which extend beyond side edges of the second conductive layer,
- wherein the pair of lightly doped regions has a pair of first portions which are overlapped by the pair of tapered portions of the first conductive layer, and a pair of second portions which extend beyond side edges of the first conductive layer.

52. A device according to claim 51, wherein an angle between the tapered portions of the first conductive layer and the gate insulating film is in a range of 3 to 60 degrees.

53. A device according to claim 51, wherein the semiconductor island is a crystalline silicon island.

54. A device according to claim 51, wherein the first conductive layer includes at least one selected from the group consisting of chromium (Cr), tantalum (Ta), an n-type silicon containing phosphorus, titanium (Ti), tungsten (W), and molybdenum (Mo) while the second conductive layer includes at least one selected from the group consisting of aluminum (Al), copper (Cu), chromium (Cr), tantalum (Ta), titanium (Ti), tungsten (W), molybdenum (Mo), an n-type silicon containing phosphorus, and silicide.

55. A semiconductor device having an active matrix display device, said display device comprising:

at least one first thin film transistor formed over a substrate;

a pixel electrode electrically connected to said first thin film transistor;

a driver circuit including at least one second thin film transistor formed over said substrate for driving said at least one first thin film transistor, said first thin film transistor comprising:

a semiconductor island on an insulating surface over the substrate;

source and drain regions formed in the semiconductor island;

a channel region in the semiconductor island between the source and drain regions;

a pair of lightly doped regions formed between the channel region and the source and drain regions wherein an impurity concentration in the lightly doped regions is smaller than that in the source and drain regions;

a gate electrode formed over the semiconductor island with a gate insulating film interposed therebetween wherein said gate electrode comprises at least a first conductive layer and a second conductive layer formed on the first conductive

layer, said first conductive layer having a pair of tapered portions, which extend beyond side edges of the second conductive layer,

wherein the pair of lightly doped regions has a pair of first portions which are overlapped by the pair of tapered portions of the first conductive layer, and a pair of second portions which extend beyond side edges of the first conductive layer, and the concentration of said impurity in the pair of first portions monotonically increases in a direction from said channel region toward the source and drain regions.

56. A device according to claim 55, wherein an angle between the tapered portions of the first conductive layer and the gate insulating film is in a range of 3 to 60 degrees.

57. A device according to claim 55, wherein the semiconductor island is a crystalline silicon island.

58. A device according to claim 55, wherein the first conductive layer includes at least one selected from the group consisting of chromium (Cr), tantalum (Ta), an n-type silicon containing phosphorus, titanium (Ti), tungsten (W), and molybdenum (Mo) while the second conductive layer includes at least one selected from the group consisting of aluminum (Al), copper (Cu), chromium (Cr), tantalum (Ta), titanium (Ti), tungsten (W), molybdenum (Mo), an n-type silicon containing phosphorus, and silicide.

59. A device according to claim 55, wherein the semiconductor device is one selected from the group consisting of a video camera, a digital camera, a rear-type projector, a front-type projector, a head mount display (a goggle-type display), a navigation system for vehicles, a personal computer, a mobile computer, a cellular phone, and an electronic book.

60. A semiconductor device having an active matrix display device, said display device comprising:

at least one first thin film transistor formed over a substrate;  
a pixel electrode electrically connected to said first thin film transistor;  
a driver circuit including at least one second thin film transistor formed over said substrate for driving said at least one first thin film transistor, said second thin film transistor comprising:

a semiconductor island on an insulating surface over the substrate;  
source and drain regions formed in the semiconductor island;  
a channel region in the semiconductor island between the source and drain regions;

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a pair of lightly doped regions formed between the channel region and the source and drain regions wherein an impurity concentration in the lightly doped regions is smaller than that in the source and drain regions;

a gate electrode formed over the semiconductor island with a gate insulating film interposed therebetween wherein said gate electrode comprises at least a first conductive layer and a second conductive layer formed on the first conductive layer, said first conductive layer having a pair of tapered portions, which extend beyond side edges of the second conductive layer,

wherein the pair of lightly doped regions has a pair of first portions which are overlapped by the pair of tapered portions of the first conductive layer, and a pair of second portions which extend beyond side edges of the first conductive layer, and the concentration of said impurity in the pair of first portions monotonically increases in a direction from said channel region toward the source and drain regions.

61. A device according to claim 60, wherein an angle between the tapered portions of the first conductive layer and the gate insulating film is in a range of 3 to 60 degrees.

62. A device according to claim 60, wherein the first conductive layer includes at least one selected from the group consisting of chromium (Cr), tantalum (Ta), an n-type silicon containing phosphorus, titanium (Ti), tungsten (W), and molybdenum (Mo) while the second conductive layer includes at least one selected from the group consisting of

aluminum (Al), copper (Cu), chromium (Cr), tantalum (Ta), titanium (Ti), tungsten (W), molybdenum (Mo), an n-type silicon containing phosphorus, and silicide.

63. A device according to claim 60, wherein the semiconductor device is one selected from the group consisting of a video camera, a digital camera, a rear-type projector, a front-type projector, a head mount display (a goggle-type display), a navigation system for vehicles, a personal computer, a mobile computer, a cellular phone, and an electronic book.

64. A semiconductor device having an active matrix display device, said display device comprising:

at least one first thin film transistor formed over a substrate;

a pixel electrode electrically connected to said first thin film transistor;

a driver circuit including at least one second thin film transistor formed over said substrate for driving said at least one first thin film transistor, each of the first and second thin film transistors comprising:

a semiconductor island on an insulating surface over the substrate;

source and drain regions formed in the semiconductor island;

a channel region in the semiconductor island between the source and drain regions;

a pair of lightly doped regions formed between the channel region and the source and drain regions wherein an impurity concentration in the lightly doped regions is smaller than that in the source and drain regions;

a gate electrode formed over the semiconductor island with a gate insulating film interposed therebetween wherein said gate electrode comprises at least a first conductive layer and a second conductive layer formed on the first conductive layer, said first conductive layer having a pair of tapered portions, which extend beyond side edges of the second conductive layer,

wherein the pair of lightly doped regions has a pair of first portions which are overlapped by the pair of tapered portions of the first conductive layer, and a pair of second portions which extend beyond side edges of the first conductive layer, and the

concentration of said impurity in the pair of first portions monotonically increases in a direction from said channel region toward the source and drain regions.

65. A device according to claim 64, wherein an angle between the tapered portions of the first conductive layer and the gate insulating film is in a range of 3 to 60 degrees.

66. A device according to claim 64, wherein the semiconductor island is a crystalline silicon island.

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67. A device according to claim 64, wherein the first conductive layer includes at least one selected from the group consisting of chromium (Cr), tantalum (Ta), an n-type silicon containing phosphorus, titanium (Ti), tungsten (W), and molybdenum (Mo) while the second conductive layer includes at least one selected from the group consisting of aluminum (Al), copper (Cu), chromium (Cr), tantalum (Ta), titanium (Ti), tungsten (W), molybdenum (Mo), an n-type silicon containing phosphorus, and silicide.

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~~68. A device according to claim 64, wherein the semiconductor device is one selected from the group consisting of a video camera, a digital camera, a rear-type projector, a front-type projector, a head mount display (a goggle-type display), a navigation system for vehicles, a personal computer, a mobile computer, a cellular phone, and an electronic book.~~

69. A device according to claim 13 wherein said active matrix display device is a liquid crystal device.

70. A device according to claim 46 wherein said active matrix display device is a liquid crystal device.

71. A device according to claim 51 wherein said active matrix display device is a liquid crystal device.



*sub E9* 72. A device according to claim 56 wherein said active matrix display device is a liquid crystal device.

73. A device according to claim 60 wherein said active matrix display device is a liquid crystal device.

74. A device according to claim 64 wherein said active matrix display device is a liquid crystal device.

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cont* 75. A device according to claim 13 wherein said active matrix display device is an electroluminescent display device.

76. A device according to claim 46 wherein said active matrix display device is an electroluminescent display device.

77. A device according to claim 51 wherein said active matrix display device is an electroluminescent display device.

*sub E10* 78. A device according to claim 56 wherein said active matrix display device is an electroluminescent display device.

79. A device according to claim 60 wherein said active matrix display device is an electroluminescent display device.

80. A device according to claim 64 wherein said active matrix display device is an electroluminescent display device.

81. A device according to claim 60, wherein the semiconductor island is a crystalline silicon island.--

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